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ABSTRACT

Using a 6-week, test-retest design with 37 third-grade students, the stability of the Reading Style Inventory (RSI) was assessed. The consistency of the recommended reading method interventions that derive from the RSI was also examined. The RSI consists of 52 items organized into two sections. The first section contains 14 three-option questions and 12 two-option questions addressing student preferences for physical and social aspects of the learning environment. The second section contains 26 two-option questions relating to students' preferred modality. In addition to the basic inventory question booklets and response sheets, there is also a diskette for scoring the inventories and generating summary descriptive data and intervention recommendations. Output from the scoring diskette includes summary descriptors of the student's identified preferences, instructional/curricular interventions rated as "highly recommended", "recommended", "acceptable", or "not recommended"; and recommended modifications to each listed intervention other than those "not recommended." Results of this study indicate that reliabilities for the perceptual modality scales approximated those reported in the RSI manual, but confirm the inventory's low reliability. Reading method recommendations and strategies recommended for implementing those methods showed considerable variability across the two administrations of the RSI. Questions are raised concerning the RSI's use for prescriptive purposes given the observed instability. One tables is included. (TJH)

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Assessing Instrument Stability and Recommended Interventions of the Reading Style Inventory with 3rd Grade Students

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Abstract

The purpose of the present study was to assess the stability of the Reading Styles Inventory (RSI), and the consistency of the recommended reading method interventions that derive from the RSI. The study used a six-week test-retest design with 34 third grade students. Reliabilities for the perceptual modality scales approximated those reported in the manual, and confirm the inventory's low reliability. Reading method recommendations, and strategies recommended for implementing those methods, showed considerable variability across the two administrations of the RSI. Questions are raised concerning use of the RSI for prescriptive purposes given the observed instability.

It is a well accepted axiom among educational practitioners that children learn in different ways, and that instruction should be adapted to the learner's needs. However, translating the axiom into practice poses significant problems. From the broadest perspective, adjusting to individual differences among learners requires an adequate definition and delimitation of the individual difference construct, adequate operationalization of that construct definition, development of reliable and valid instruments and/or procedures for assessing that construct, and development of appropriate interventions that derive from the relationship between the individual difference variable and learning processes. Failure to deal with any one of these issues adequately would lead to findings that are problematic at best. Problems in these areas are evident in the area of learning styles research. Educational research provides very limited support for the efficacy of adjustments to individual difference variables among learners, including adjustments to learning style (see Cronbach & Snow, 1977). Early ATI research has been criticized as yielding mixed results because the attributes investigated were too broadly defined (Driscoll, 1987). This may account for some of the mixed results reported by Cronbach and Snow (1977). However learning styles research suffers from much of the same problem of definition. What are the components of learning style? Is style a stable trait or a learned characteristic? Should instruction be matched, mismatched, or mixed matched to style? Despite the lack of substantive evidence for efficacy, many teachers remain committed to the notion of learning styles, and seek ways to measure learners' styles and adjust instruction accordingly.

Fundamental to the learning styles-based education movement are the assumptions that individuals do differ in meaningful ways in their style of learning; that an individual's learning style represents a relatively stable trait; that this trait can be assessed using relatively simple

instruments; and that, once an individual's style is known, educational interventions can be identified or developed which will enhance learning. It is important to note that accepting any or all of these assumptions does not mean that one need accept the current means of operationalizing learning style or its assessment.

One of the most popular techniques for assessing style is the use of an inventory. Such inventories typically ask learners to self-report on the manner in which they feel they learn best, or on the conditions under which they feel they learn best, or prefer to learn. The use of self-report techniques focusing on preferences assumes that such aspects of cognitive functioning are subject to conscious knowledge and accurately reportable. Given these assumptions, it is very disappointing to see virtually no communication or collaboration among researchers in learning styles and researchers in the area of metacognition.

As a field, metacognition focuses on understanding the knowledge that individuals have of their cognitive processes, and how they regulate those processes. One aspect of metacognition, metacognitive knowledge, would seem to be particularly relevant to the use of self-report inventories to assess children's learning styles. Research suggests that metacognitive knowledge, although stable and statable, is also fallible and relatively late developing (Baker & Brown, 1984; Brown & Palincsar, 1982; Garner, 1987; Markman, 1979; Myers & Paris, 1978). Using self-report inventories with young children would therefore assume a level of metacognition that is questionable at best among young learners.

Developing interventions based on preferences also assumes that learning preference and learning strength are synonymous. Rita Dunn argues that students taught through preference-matched techniques achieve at higher levels and have better attitudes, and that such increases mean, de facto, that one's preference is one's strength (Dunn, 1990, p. 15). There is

counter evidence, however, in that students having difficulty in schools will often opt for low structure activity or group work instead of structured individual activity if given the chance. A substantial body of research on instructional design would suggest that such students would profit from more structured teaching approaches. In this case, what students might prefer is mismatched to their instructional needs.

Although data from the learning styles consortium at St. John's suggest that matching instruction to students' learning styles can have a powerful impact on achievement, there is also cause for caution. For example, in the technical manual for the Reading Styles Inventory, Marie Carbo reports average September to May gains of from 1.5 to 4.1 Grade Level Equivalents (GLE's) on standardized reading achievement tests as a result of matching reading instruction to student's reading style (Carbo, 1982, p. 5). The results span grades one to six (May GLE's from 2.8 for grade 1 to 8.1 for grade 6), with a total sample of 24 students labeled as "Remedial Reading Students". Although interpretation of GLE's is problematic, a reasoned analysis would suggest that these reported gains are enormous. Given the tendency to report average effect sizes of .6 or above as large effects in meta-analyses, and the strong message that minimal intervention should be expected to yield little or no benefit in Cronbach and Snow's (1977) treatment of ATI research (including learning styles), these results border on the miraculous.

Although most inventories address learning in general (eg. Kolb's LSI; Dunn, Dunn, & Price's LSI; NASSP's LSP; McCarthy's Format), one, the Reading Styles Inventory (Carbo, 1982), is subject specific. In principle, giving a specific task context for student responses might lead to greater consistency of response to the inventory questions by the learner, and lead to the generation of more valid intervention recommendations. Specifying the context for self-report of learning strategies has been found to increase the correspondence between

predicted or anticipated behavior and actual behavior in comprehension monitoring tasks with competent readers (Forlizzi & Clark, 1989).

Marie Carbo has also suggested that once a learner's reading style is identified, the learner need not be reassessed for a period of up to three years. Such might be a reasonable recommendation if reading style were a stable trait, if learners had sufficient self-awareness of that style to respond to the instrument, and if the instrument were technically sound. However, data on the inventory cited in the technical manual are disappointing. Test-retest reliabilities on the various scales of the RSI are reported only up to a six-week period. Even so, the reliabilities are somewhat low. If this lack of stability in categorization also yields variable and potentially contradictory intervention recommendations, then the use of the inventory as a basis for instructional design and intervention is suspect.

Given these questions, the purpose of this study is to assess the stability of the Reading Style Inventory over a six-week interval, and to assess the consistency of the intervention recommendations from the RSI over the six-week interval.

Method

Design. This study used a traditional two assessment reliability design with a six-week interval between testings.

Subjects. Subjects were 45 students in two third grade classrooms in a local public school system. Two students who were present at second testing were absent for the initial test, three students who had been absent for the initial testing were present for the second testing, two students moved between testings, and one new student entered school prior to the second testing.

This meant that only partial data were available for eight students resulting in a final sample of 37 students for whom complete data were available.

Materials. The RSI consists of 52 items organized in two sections. The first section contains fourteen three-option questions and twelve two-option questions addressing student preferences for physical and social aspects of the learning environment. The second section contains twenty-six two-option questions relating to students' preferred modality. In addition to the basic inventory question booklets and response sheets, there is also a diskette for scoring the inventories and generating summary descriptive data and intervention recommendations.

Procedures. Subjects were administered the Reading Styles Inventory early in the school year (October), and again after a six week period (early November). The instrument was group-administered by the classroom teacher during a regularly scheduled reading class in accordance with procedures specified in the manual.

Results

Test-retest reliability. In order to calculate test-retest reliabilities, we needed to reconstruct scores for the sixteen various scales of the RSI. Relevant data for construction of such scores are not available in the technical manual, nor are they provided with the output from the computer scoring diskettes. After solicitation of scoring information from the publisher (National Reading Styles Institute), we were provided with item numbers and keyed responses for the four perceptual modality scales, but were denied access to scoring information for the remaining twelve scales. The four modality scales (visual, auditory, tactual, and kinesthetic) consisted of 8, 7, 6, and 5 items respectively. These four scales, then, reflect 50% of the total items leaving the

remaining 26 items to be split among the other twelve scales.

Table 1 provides test-retest reliabilities reported for each scale in the technical manual (3-week interval) and data obtained from the present study. As can be seen, reliabilities obtained in the present study for the four perceptual scales were comparable to those reported in the manual. A subsequent analysis of response consistency to the various items in each subscale indicated that there was a median of 29% response changes (range from 19% to 46%) overall on the perceptual scales items. These items were all two-option items, so a shift in response would reflect a preference for "the opposite" type of intervention than selected on the first administration of the inventory.

Intervention Recommendations. Output from the scoring diskette includes summary descriptors of the student's identified preferences; instructional/curricular interventions rated as "highly recommended", "recommended", "acceptable", or "not recommended"; and recommended modifications to each listed intervention other than those "not recommended." Although not specifically stated in the manual, it appears as though the initial intervention/curricular recommendations were based on matching the student's modality strength(s) with the focus of specific methodologies, while modifications to those recommendations were based on responses to the remaining 12 scales (26 items). There were 7 different methods recommended through the diskette scoring package, Language Experience, Whole Word, Individualized Method, Phonic Method, Carbo Recorded Book Method, the Fernald Method, and the Orton Gillingham method. Table 2 presents a sample output with recommendations.

In order to assess the consistency of recommended interventions, we chose to consider only those methods that were rated as "highly recommended" under the assumption that those methods were most closely matched to the student's identified reading style and would be the intervention

of choice given availability of materials. Recommendations were then tabled for each student for the initial and second testings. The analysis revealed that only 60% of the methods that were rated as "highly recommended" after the initial testing were also rated as "highly recommended" after the second testing.

We also tabled the recommended modifications to the "highly recommended" methods. This analysis indicated that only 55% of the modifications to the "highly recommended" methods from the first testing were also recommended as modifications **for the same method** after the second testing.

Discussion

Results from the present study relating to test-retest reliability of the RSI are consistent with data reported in the technical manual for the instrument. That suggests that there is no reason to believe that subjects in this study showed any less stable level of response to inventory questions than would be anticipated from other samples of students. However, an analysis of the intervention recommendations and instructional modifications to those intervention recommendations reveals a great deal of inconsistency. This would suggest that either reading style is not a particularly stable construct (trait?), that the RSI is not sufficiently sound to detect stable aspects of the construct, that there is no clear link between inventory responses and intervention recommendations, or a combination of these factors. In any case, serious questions are raised as to how to match intervention to assessed style given such instability in both assessment and intervention recommendations.

Despite these concerns, there are numerous advocates of learning styles based approaches to

instruction, and ample reports in the literature of success stories following matching instruction to assessed style (see for example the October, 1990 issue of Educational Leadership.) While it may be difficult to question performance data that are reported, it is less clear to what the improvement should be ascribed. Given the high level of instability in "highly recommended" reading methods noted in the present study, it stands to reason that over the course of a relatively finite instructional period, a substantial proportion of students would either have to switch methods regularly to maintain a "highly recommended" match remain with a method that might not be "highly recommended" as a match. If efficacy claims rely on stable style-method matches, then these data cast doubt on that explanation. We could find no research studies that attempted an assess-match, reassess-rematch design to assess the extent of potential method changes. However it is interesting to speculate on what it would mean to observe improvements in each case.

It would seem that the logical next step in learning styles research should be to identify the potential loci of treatment potency. If true potency does not lie in stable style-method matches, then perhaps it resides in the ancillary adjustments to physical and social aspects of the learning environment.

References

Baker, L., & Brown, A. L. (1984). Metacognitive skills and reading. In P. D. Pearson, R. Barr, M. L. Kamil, & P. Moesenthal, (Eds.), Handbook of reading research. New York: Longman.

Brown, A. L., & Palincsar, A. (1982). Inducing strategic learning from texts by means of informed self-control training. In D. K. Reid & B. Y. L. Wong (Eds.), Metacognition and learning disabilities. Gaithersburg, MD: Aspen Systems Corporation.

Carbo, M. (1982). Reading Style Inventory. New York: Learning Research Associates.

Cronbach, L., & Snow (1977). Aptitudes and instructional methods. New York: Irvington.

Driscoll, M. P. (1987). Aptitude-Treatment Interaction research revisited. Paper presented at the Annual Convention of the Association for Educational Communications and Technology.

Dunn, R. (1990). Rita Dunn answers questions on learning styles. Educational Leadership, 48, 15-19.

Forlizzi, L. A., & Clark, H. T. (1989). Relationships among use, predicted use, and awareness of use of comprehension-repair strategies: Converging evidence from different methodologies. Paper presented at the Annual Meeting of A.E.R.A., San Francisco, CA, March, 1989.

Garner, R. (1987). Metacognition and reading comprehension. Norwood, N. J.: Ablex.

Markman, E. (1979). Realizing that you don't understand: Elementary school children's awareness of inconsistencies. Child Development, 50, 643-655.

Myers, M., & Paris, S. B. (1978). Children's metacognitive knowledge about reading. Journal of Educational Psychology, 70, 680-690.

Table 1

Reliabilities for Scales of the RSI

	MANUAL			OUR DATA
SCALE	GRADE 2	GRADE 4	COMBINED	GRADE 3
SOUND	.82	.73	.72	
LIGHT	.77	.68	.69	
TEMPERATURE	.67	.66	.65	
DESIGN	.80	.67	.71	
MOTIVATION	.68	.72	.70	
PERSISTENCE	.65	.64	.63	
RESPONSIBILITY	.68	.70	.64	
STRUCTURE	.76	.70	.72	
SOCIOLOGICAL	.69	.55	.67	
INTAKE	.76	.59	.67	
TIME OF DAY	.72	.63	.66	
MOBILITY	.67	.73	.76	
PERCEPTUAL SUBSCALES:				
AUDITORY	.79	.75	.74	.59
VISUAL	.83	.71	.77	.71
TACTUAL	.78	.68	.69	.69
KINESTHETIC	.75	.74	.75	.62